

Detector performance



Forschungszentrum Karlsruhe
in der Helmholtz-Gemeinschaft



Universität Karlsruhe (TH)
Research University · founded 1825

Temperature Control

Default register setting

ADC_GAIN = 40

Address	Name	Required Value
103	ADC_GAIN	44
84	I_col	4
85	I_col_prech	1
88	Vtf_l1	64
91	Vres_low	64
94	V_precharge	101
98	V_ramp1	109
99	V_ramp2	109
95	V_ref	106
117	Config1	1
115	Config2	1
82	Channel_en	7

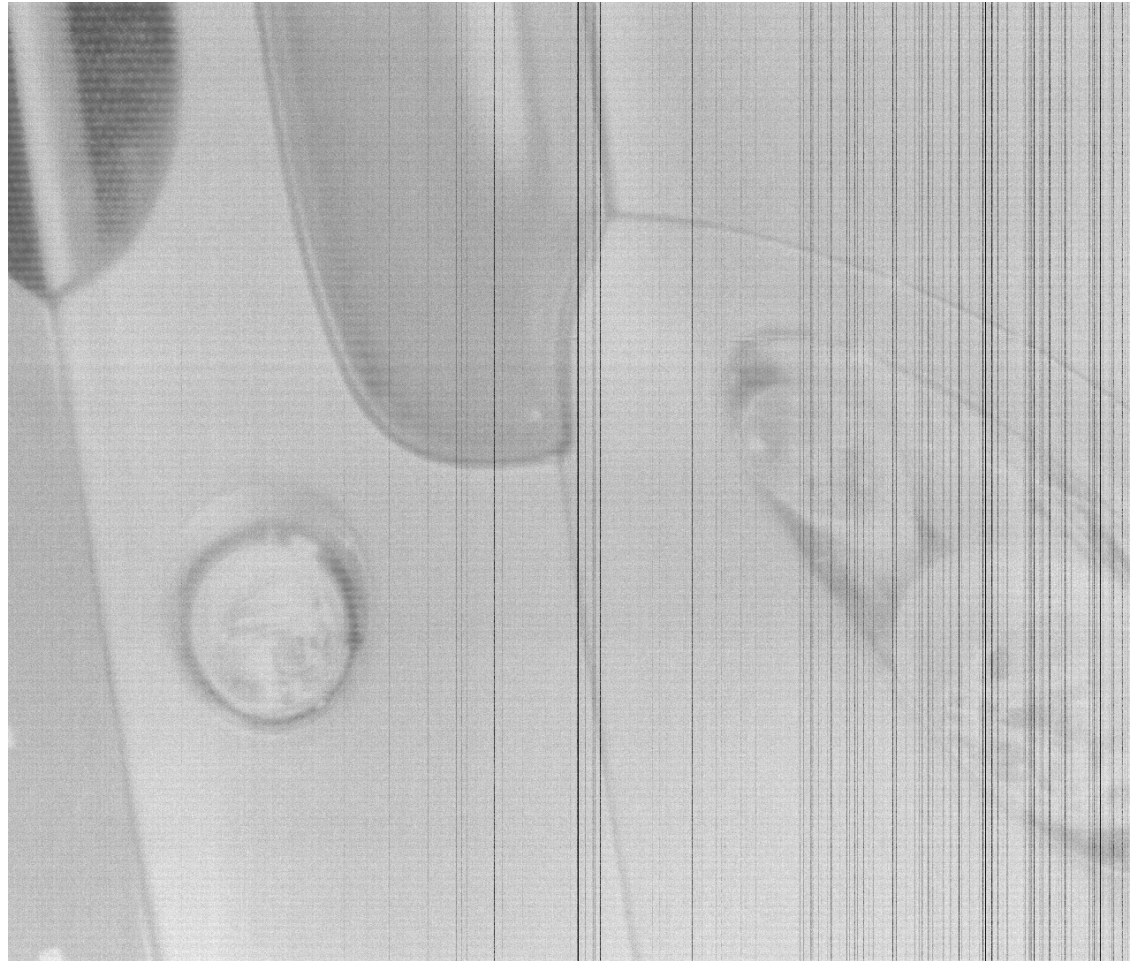
Reading one line, exp time = 294us

10 channels

Readout time:

~15 min

**Initial HW and SW
setup**



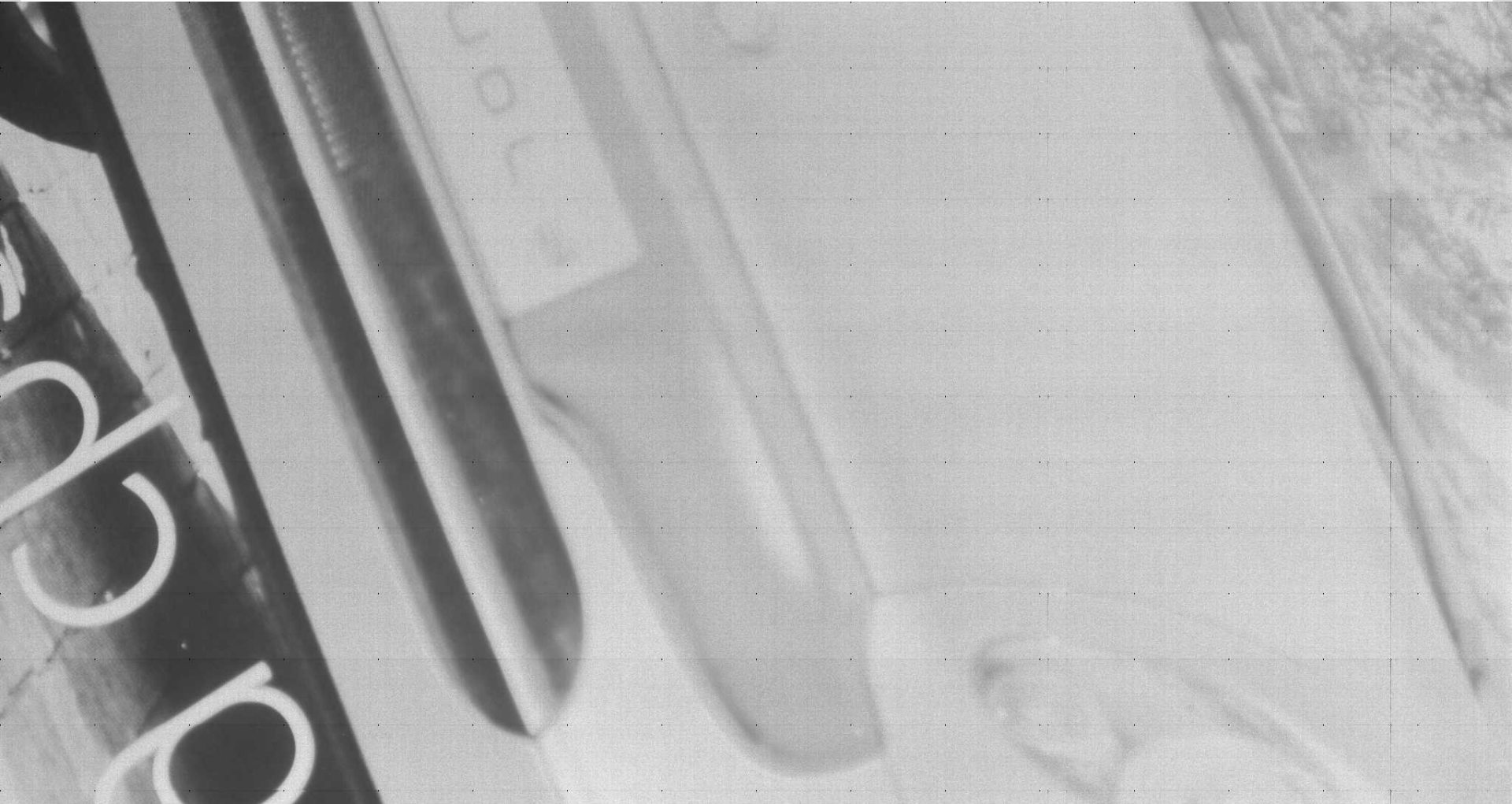
Reading one line, exp time = 35 us



Full channel readout exp time = 13 us



90 lines, exp time 293 us



Exp time = 9 us



Exp time = 13 us



Vramp1, Vramp2 = 102



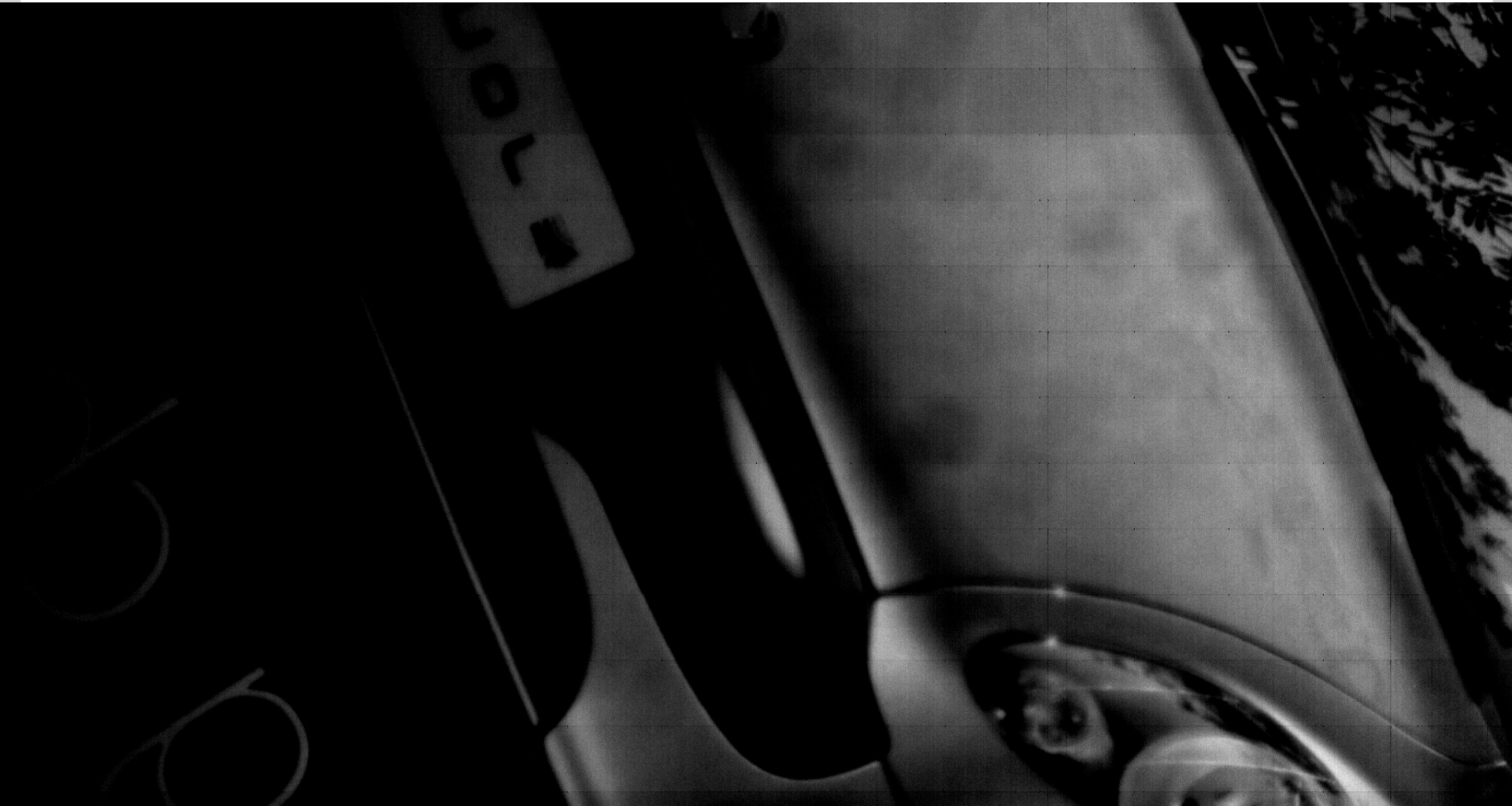
Vramp1, Vramp2 = 115



Offset = 16128

Eq: Dark level = 70 + setting - 16383

Offset = 16256



Offset = 16304



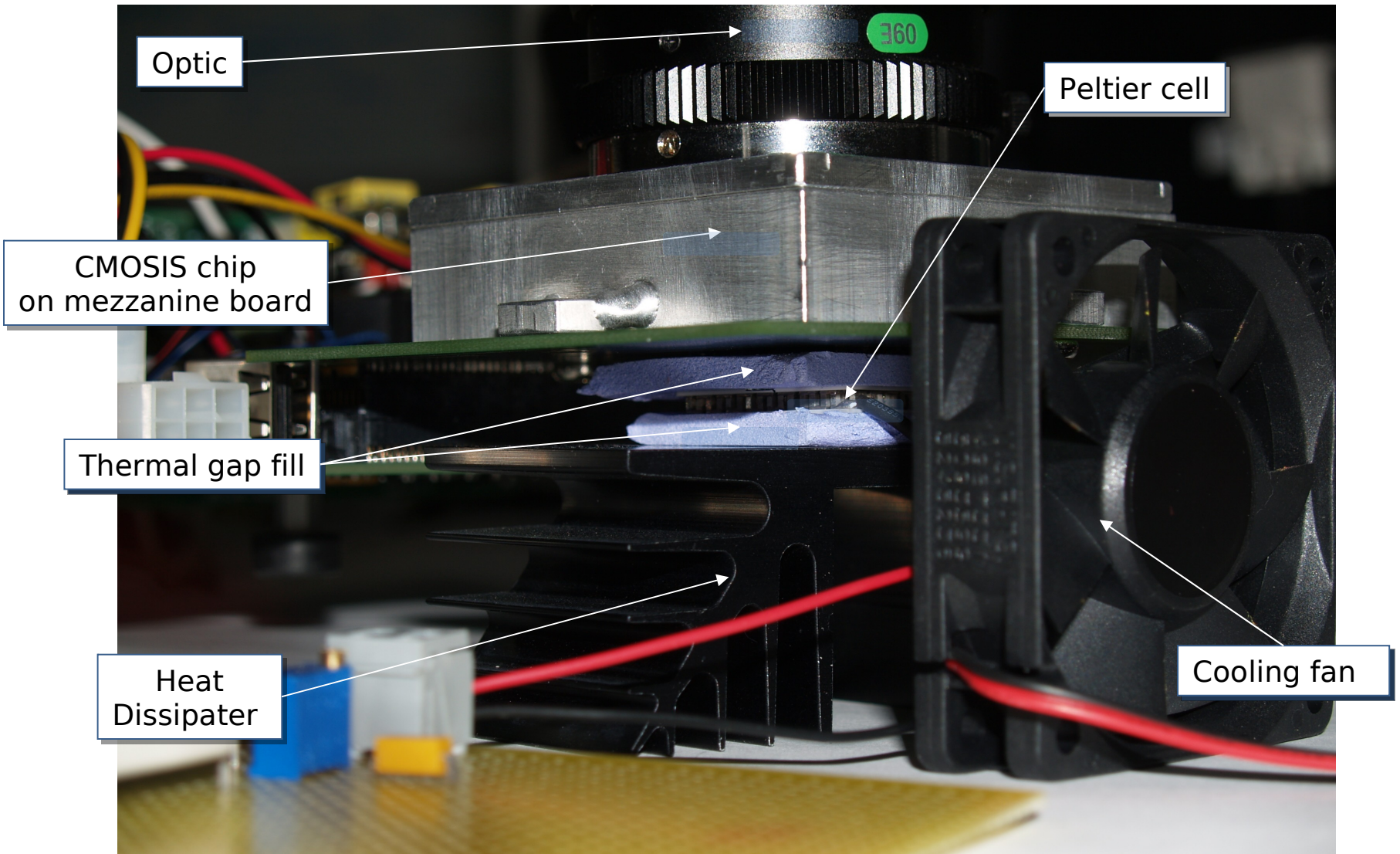
High temp, 32.7 C



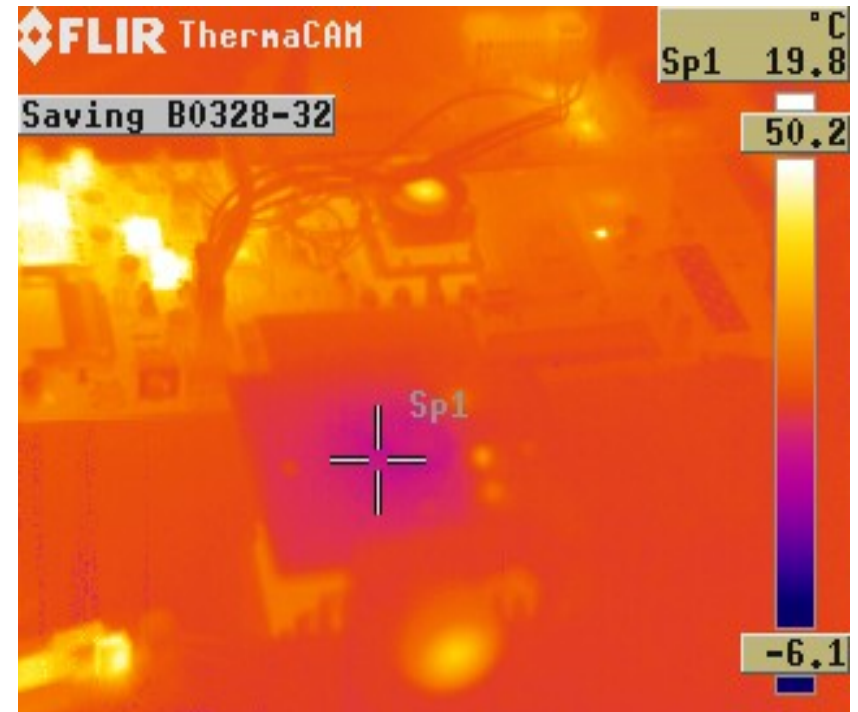
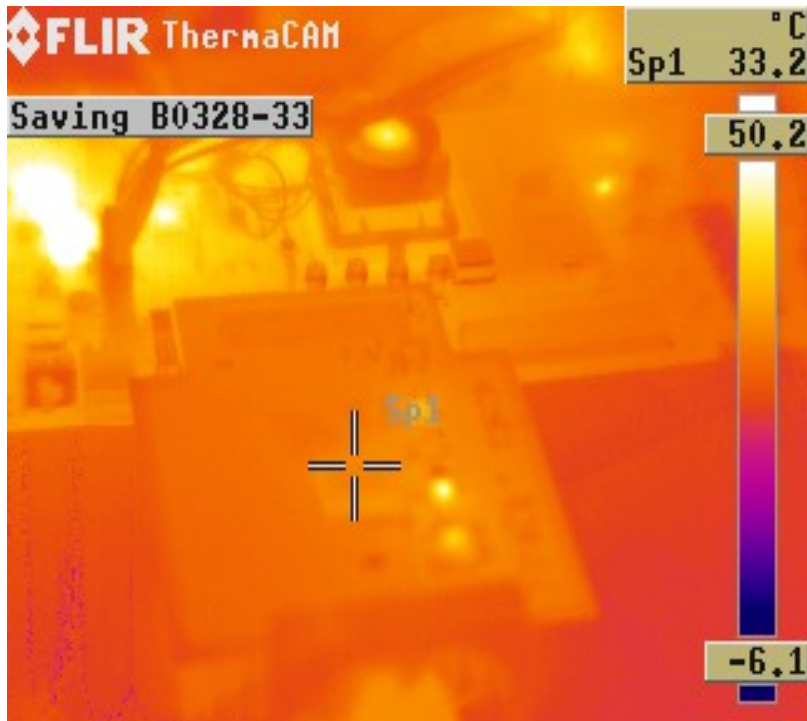
Lower temp, 17.4 C



Temperature control system



Thermal camera images



Conclusion

- **Established full access and control of the chip**
- **All features of the chip can be used, ex. image subsampling which is vital for Fast reject algorithm**
- **Thermal control of the chip by FPGA**